REMARKS

As a preliminary matter, Japanese Patent No. 3729763 disclosed in the IDS filed April 13, 2006 corresponds to Japanese Laid-Open Patent Application No. 2002-352047, both of which correspond to U.S. Publication No. 2002/0064689, also disclosed in the IDS. Applicant requests consideration of the Japanese Patent No. 3729763 and an initialed copy of Form PTO-1449, indicating that the reference has been considered.

Claims 17-20, 23 and 24 stand rejected under 35 U.S.C. §102(e) as being anticipated by or, in the alternative, under 35 U.S.C. §103(a) as being obvious over Yamanaka et al. Applicant respectfully traverses this rejection, because the cited reference does not disclose or suggest the antiparallel state of the first and second magnetic layers, or the exchange coupling field of the first magnetic layer, as described in the claims.

In the present invention, the magnetizations of the first and second magnetic layers are switched from a first antiparallel state I to a second antiparallel state III directly, and vice versa, as shown in FIG. 4A, without entering into a parallel state II shown in FIG. 4B.

On the other hand, the magnetization of the two magnetic layers in Yamanaka et al. are switched between two antiparallel states always via a parallel state, and cannot switch from one antiparallel state to the other antiparallel state directly. Hence, the magnetizations of the two magnetic layers in Yamanaka et al. switch as shown in FIG. 4B of the subject application, and not as shown in FIG. 4A.

Moreover, unlike the present invention where the exchange coupling field of the first magnetic layer is larger than both the coercivities of the first and second magnetic

layers, the exchange coupling field is not larger than both the coercivities of the two magnetic layers in Yamanaka et al. The exchange coupling field in Fig. 4 or Fig. 11 of Yamanaka et al. is approximately 2 kOe, and while the coercivity of one magnetic layer is less than 1 kOe, the coercivity of the other magnetic layer is approximately 5 kOe, which is larger than that of the exchange coupling field. Fig. 15 of Yamanaka et al. shows data supporting such relationship. Specifically, the Figure shows that the exchange coupling field only increases to approximately 2 kOe even when the film thickness of the lattice spacing-adjusting layer is decreased to 1 nm, but the coercivity of the layer is approximately 3.5 kOe to 4.5 kOe. Accordingly, according to the range experimented in Yamanaka et al., the exchange coupling filed is always less than or equal to the coercivity of the magnetic layer.

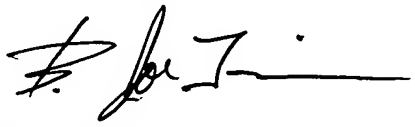
Further, the Examiner asserts that the magnetic grain regions in Yamanaka et al. correspond to the "unit recording portions" of the present invention. Applicant respectfully submits that it is virtually impossible for the magnetic grain region in Yamanaka et al. to form the "unit recording portion" of the present invention. The magnetization at the grain boundary in Yamanaka et al. is weakened because more additives exist in the magnetic material. Hence, although magnetically weak, the grains are coupled, and it would be virtually impossible to record one bit in one grain. In addition, the coercivity is inconsistent in the kind of magnetic materials used in Yamanaka et al. Moreover, since the grain boundary is naturally formed when the magnetic layer is formed, the grain boundary is in disorder due to the inconsistent shape and size of the grains. Yamanaka et al. can suppress the undesirable effects of the inconsistent shape and size of the grains only because a large number of grains exist within the unit recording region.

It should also be noted that the unit recording region has a size close to the width of a recording element. In general, the grain diameter of magnetic materials described in Yamanaka et al. is approximately 6 nm to approximately 20 nm, and it is also evident from the size relationship of the recording element and the grain diameter that one bit cannot be recorded on one grain. For all these reasons, claims 17-20 and 23-24 are believed to be allowable over Yamanaka et al.

The present invention is now believed to be in condition for allowance, which is respectfully requested. The Examiner should contact Applicants' undersigned attorney if a telephone conference would expedite prosecution.

Respectfully submitted,

GREER, BURNS & CRAIN, LTD.

By 

B. Joe Kim
Registration No. 41,895

November 17, 2006

Suite 2500
300 South Wacker Drive
Chicago, Illinois 60606
(312) 360-0080
Customer No. 24978